TECHNOLOGY AND SERVING INDIVIDUALS WITH SPECIAL NEEDS

Presented by the:

Electronic One-Stop Steering Committee

Approved by:

**California's One-Stop Career Center System
Task Force**

September 4, 1997

Technology and Serving Individuals with Special Needs

TABLE OF CONTENTS   **PAGE**

TABLE OF CONTENTS   PAGE

TABLE OF CONTENTS PAGE

APPENDICES PAGE

EXECUTIVE SUMMARY

This report, "Technology and Serving Individuals with Special Needs," presents guidelines prepared by the Electronic One-Stop Steering Committee (EOSSC) and approved by the One-Stop Career Center System Task Force for providing information environments that are accessible by individuals with special needs. The guidelines support information accessibility for the following "special needs" populations:

- Persons with limited literacy
- Persons with disabilities
- Persons uncomfortable or adverse to electronic technology or with limited skills or experience
- Persons whose primary language is not English
- Persons with economic or geographic barriers

In addition, the report includes the EOSSC's recommendations for testing the guidelines.

The guidelines and recommendations in this report are not an attempt to prescribe how local partners operate One-Stop Centers. The intent is to provide guidance to state and local partners who are unfamiliar with the policy and practice of information accessibility to accommodate use by individuals with special needs, and provide for their effective access to information resources of a One-Stop System.

A brief overview of each section of this report follows:

Section I describes the One-Stop Vision requirement that services be universally accessible, and the challenges of providing universal accessibility in California.

Section II describes how the Technology and Serving Individuals With Special Needs Subcommittee was chartered, the membership of the Subcommittee, and the approach the Subcommittee took for developing the guidelines.

Section III describes the purpose of the report.

Section IV describes the performance goals for universally accessible workstations, accessibility guidelines, facilitative features that will make workstations and kiosks more user-friendly, and some examples of techniques for achieving the performance goals.

Section V describes the recommendations made by the EOSSC and approved by the One-Stop Task Force for pilot testing the accessibility guidelines.

Appendix A contains Electronic One-Stop (EOS) Usability Principles which the One-Stop Task Force adopted on April 22, 1997. This document summarizes the Principles for One-Stop Information and Training (POSIT), and provides a general framework for the "look & feel" of Electronic One-Stop systems.

Appendix B contains the charter of the Technology and Serving Individuals With Special Needs Subcommittee which the One-Stop Task Force approved on February 5, 1997.

Appendix C contains information on additional usability resource materials, including books, reports, articles, Internet sites, and other relevant activities and services.

Appendix D contains usability examples from other states.

I.   BACKGROUND

A. California's One-Stop Vision

California's One-Stop Career Center System Vision, published in December 1995, was a major milestone in a collaborative planning and development process initiated in November 1994 with funding from the U.S. Department of Labor (DOL). Throughout this inclusive and public process, spokespersons representing various special needs populations expressed concerns that electronic information systems would not be accessible to, or usable by, large segments of California's diverse population.

The Vision requires that local One-Stop areas make the core services available to individuals on a universal and nondiscriminatory basis to address the needs of individuals with disabilities.

B. Challenges of Universal Accessibility in California

In August of 1996, California submitted its grant application to the U.S. DOL for funding to implement the One-Stop Vision. The application discussed the challenges of providing universal access in California.

The One-Stop System must address the challenges of California's diverse and growing population. For example, job, education, and training seekers' proficiency in the use of computers and in English as a Second Language varies greatly. Data from the 1992 National Adult Literacy Survey indicates that over 30 percent of Californians are foreign-born, and 59 percent of California's residents that are at the lowest literacy level are foreign-born. Literacy is not the only consideration for universal access. California is home to approximately three million individuals with disabilities. The unemployment rate in California for individuals with disabilities is 66 percent. If California's One-Stop System is going to provide universal access, the special needs of these populations must be addressed. Unless its electronic infrastructure is able to provide all customers with quality, value-added information they can easily view, process, understand, and effectively use, the One-Stop System will not meet the needs of California's diverse population.

California's strategy for developing innovative technology solutions that can be used statewide, is to competitively distribute funds to local One-Stop partnerships for special pilots. One pilot focus area is the use of technology to provide services to individuals with special needs. The Electronic One-Stop Steering Committee (EOSSC) is responsible for developing criteria, determining the pilot selection process, and providing oversight of these technology pilots.

II. APPROACH

A. Subcommittee on Technology and Serving Individuals with Special Needs

Responding to the challenges of developing an information environment that is accessible by California's diverse population, the EOSSC proposed the charter of a special subcommittee to develop guidelines for accommodating the needs of individuals with disabilities, individuals with low literacy levels, and individuals for whom English is a second language. The subcommittee would investigate and evaluate information technology solutions that address accessibility barriers and provide opportunities for serving individuals with special needs.

The One-Stop Task Force approved the Technology and Serving Individuals with Special Needs charter at its February 1997 meeting. See Appendix B for a copy of the charter.

B. Subcommittee Members

Steve Jensen (Subcommittee Chair)
Department of Rehabilitation

Brock Allen, Ph.D.
Department of Educational Technology
San Diego State University

Karen Goodwyn
Department of Rehabilitation

Margaret Griffin
Department of Aging

John Jewell
California State Library

Carol Kelly
Health & Welfare Data Center

Margaret Kirkpatrick
Berkeley Adult School

Robert Marr
State One-Stop Team

Patricia L. Morrison
Employment Development Department

Mary Ann Pattinson
California State Library

Stephanie Riley
La Cooperativa Campesina de California

Richard Stiles
California Department of Education

Sharon Williams
Golden Sierra Job Training Agency

C. Methodology

The members of the Subcommitee on Technology and Special Needs represent public and non-profit agencies and programs serving persons with disabilities and other special needs (see member list in Item B.).

The subcommittee first defined those populations (noted in Executive Summary and in Section III) that might require special accommodations or assistance to effectively use electronic systems which provide on-line access by One-Stop customers to information and services. Next the subcommittee gathered available literature that addressed technological solutions relevant to these populations, collectively shared knowledge from their experiences, reviewed approaches taken by One-Stops within California and other states (see Appendix D), and listened to presentations by researchers, such as Dr. Brock Allen, of literacy requirements and the importance of general usability of computer-based systems.

Based on a thorough review and analysis of this information, the subcommittee developed performance guidelines for a workstation/kiosk design applicable to the widest range of abilities or circumstances rather than a multiplicity of workstation/kiosk designs to meet the discrete needs of each group. To accomplish its task, the subcommittee relied principally on two sources: the Trace Research and Development Center in Wisconsin and the Congressional Telecommunications Access Advisory Committee.

III.   PURPOSE OF REPORT

This report delivers information technology accessibility goals and guidelines for serving individuals with special needs. The guidelines address the needs for the following "special needs" populations:

- Persons with limited literacy
- Persons with disabilities
- Persons uncomfortable or adverse to electronic technology or with limited skills or experience
- Persons whose primary language is not English
- Persons with economic or geographic barriers

These guidelines are intended for use by state and local One-Stop partners who are unfamiliar with the policy and practice of information accessibility to accommodate individuals with special needs, and provide for their effective access to information resources and services.

The Subcommittee on Technology and Serving Individuals with Special Needs proposes a comprehensive workstation design that can be used by individuals with the widest range of abilities and circumstances. The subcommittee does not envision a design that is usable by all persons under all circumstances. For this reason, some features are recommended to facilitate access, but are not specified as performance goals.

The subcommittee's recommendations are consistent with the "EOS Usability Principles" which were adopted by the One-Stop Task Force on April 22, 1997. (See Appendix A)

IV. SUBCOMMITTEE RECOMMENDATIONS

A. Performance Goals for Universally Accessible Workstations

Universal design yields products that are usable by, and useful to, the widest possible range of people. (It is recognized that it is not possible to create a product that is usable by all people under all circumstances.)

The objective is to create a computer workstation/kiosk design that:

- Can be used by individuals with the widest possible range of abilities and/or circumstances.
- Is commercially feasible using currently available technologies, materials, and skills.

The workstation/kiosk should:

- Allow as many people as possible to use the design effectively without requiring special assistive technologies.
- Be compatible with assistive technologies that might be used by people for whom we currently do not know how to provide direct access.

B. Accessibility Guidelines

When readily achievable, the workstation/kiosk must provide the following types of access for individuals with special needs:

Non-Visual Access

- All important information will be presented in an auditory fashion. This includes all directions, labels for all controls, and feedback from controls that are necessary for workstation/kiosk operation.

Non-Auditory Access

- All essential information will be presented in a visual fashion. This includes all Help functions and auditory information used to indicate the status of an operation such as beeps or other sounds.

Non-Time Dependent Access

- The workstation/kiosk will allow operations to be done at any rate. Response times will be adjustable over a wide range from very slow to very fast.

Minimal Physical Ability Access

- The workstation/kiosk will be operable through the use of a single button or activation area.
- The workstation/kiosk will be compatible with assistive devices. The workstation/kiosk will provide a standard port and standard data format compatible with assistive control and assistive display devices that may be used by individuals with disabilities.
- The physical design of the workstation/kiosk will accommodate the use of prosthetic or assistive devices.
- The workstation/kiosk will provide a means to reverse all choices or to confirm them before they take effect.

Limited Reach or Strength Access

- The workstation/kiosk will permit operation by individuals who are sitting, standing, and/or have limited strength.

No-Color Perception Access

- The workstation/kiosk will be operable through at least one mode that does not require color perception.

No-Speech Capability Access

- The workstation/kiosk will be operable through at least one mode that does not require speech.

Documentation Access

- All documentation for the workstation/kiosk will be available in electronic text form.

Non-Allergenic Access

- The workstation/kiosk will be made of non-allergenic materials and will not trigger photo-sensitive or audio-sensitive epilepsy.

Novice User Access

- The workstation/kiosk will provide context-sensitive help (integral instruction).
- The workstation/kiosk will provide a means for a novice user to learn the features of the system without outside assistance (self-discovery).

C. Facilitative Features

Incorporation of the following features will make the workstation/kiosk more user-friendly:

- Adjustable font size for persons with visual problems
- The ability to adjust contrast settings for persons with visual problems
- Adjustable volume and pitch for persons with hearing loss
- Sufficient physical stability to permit a user to lean on or grab parts of the kiosk for support
- A universal Help button for initiating Help functions
- The ability to turn off unwanted modalities (sound and visual display) to ensure privacy
- Operable by persons with limited reading and/or language skills
- Operable by persons with memory, cognitive, learning impairments, or poor reading skills
- Potential capability for a repeat user to enter the Electronic One-Stop (EOS) system where he/she left off in a prior visit
- At least one navigation path for searching and locating information on the EOS system needs to be readable at no higher than the 6th grade reading/literacy level
- Some secure identifier such as a PIN number needs to be issued to each customer to ensure client confidentiality
- Electronic tools must provide information in more than one language, for example, Spanish or other relevant language in areas with high non-English speaking populations

These standards for performance goals are derived, in part, from the Trace Center, the Congressional Telecommunications Access Advisory Committee, and other State sources.

D. Techniques for Addressing Accessibility Needs

The following examples describe techniques that will allow individuals with a wide range of disabilities to access and use One-Stop workstations/kiosks. These techniques also work with individuals who have reading problems, as well as those who cannot read at all. The cost to create an accessible workstation/kiosk is not generally greater than to design an inaccessible workstation/kiosk.

Examples for use without vision

Individuals who have low vision or blindness cannot accurately operate some types of controls which require vision for use. These include mice, track balls, dials without markings or stops, and push-button controls where the only indication of the position or setting of the control is visual.

If you use buttons on your product, making them discrete buttons which can be felt allows a person to locate them tactually. If you are using a flat membrane keyboard, putting a raised edge around the control areas or buttons makes it possible to tactually locate the keys. Once an individual locates the different controls, they need to identify what they are. If you have a standard number pad arrangement, putting a nib on the "5" key may be all that is necessary for identifying the numbers. On a QWERTY keyboard, putting a tactile nib on the "F" and "J" keys allows a touch typist who is blind to easily locate their hands on the keys. Providing distinct shapes for keys either indicates their function or makes it easy to tell them apart.

Providing Braille labels for keys and controls allows individuals who know Braille to figure out what the controls are for. Providing large raised letters can work for short labels on large objects. Where it is not possible to use raised large letters, you may be able to incorporate a voice mode that announces keys when pressed, but does not activate them.

Controls can also be shaped in a fashion that they can easily be tactually read (e.g., a twist knob shaped like a pie wedge). If using keys, some type of audio and tactile feedback should be provided so that the individual knows when the key has been activated. If the key is a two-state key (on/off), use a key that is physically different (a toggle switch or a push-in/pop-out switch), so the person can tell what state it is in by feeling it.

A headphone jack provides confidential access to the information on the kiosk by individuals who are blind. Combined with an optional feature

that turns off the screen, it allows complete confidential access and use of the workstation.

The workstation should provide speech output of all text which is presented on the display, as well as labels of the product. For information that is presented in non-text form (e.g., a picture or graphic), a verbal description should also be provided, unless it is just decorative in nature.

When speech output is provided, there could be a mechanism to allow for the spoken message to be repeated if the message is very long.

Examples for use without hearing

To alert the user to a call, page, or other message, or to warn the user, a visual or tactile signal that will attract the person's attention can be used. A prominent visual indication in the field of vision (e.g. a screen flash) is effective.

If the equipment uses voice or speech messages to which the user must respond, a teletypewriter (TTY) accessible method for using the system could also be provided.

To allow the workstation/kiosk to be used by individuals with hearing impairments as well as to be used in very noisy environments, a Show Sounds/Caption feature could be provided. Turning this feature on would cause all important sounds to be represented visually. Where the sounds are speech, they would be represented as words which are either incorporated into the regular screen or shown as captions. Other sounds may be depicted as captions or they may be shown in some other appropriate visual format.

Verbal descriptions should be avoided for all important graphic or movie information. For access to this information via the infrared link, verbal descriptions would be available in electronic text format.

A headphone jack also allows individuals with hearing impairments to use earphones, audio jacks on their hearing aids, or inductive loops such as a "Silhouette" to tie their hearing aid more directly into the audio so that they can hear more clearly.

Examples of use with adjustable response times

Running out of time is a common problem for people both with and without disabilities. Addressing the problem of individuals with disabilities usually involves just applying and extending the strategies

traditionally employed. The easiest solution is to avoid any time-out situations or places where the user must respond to a question or moving display in a set amount of time or at a specific time. Where timed responses are required or appropriate, allow the user to adjust them or set them to very high values.

Examples of operation with restricted physical abilities

Avoiding buttons that are activated when touched will allow an individual to explore the controls in order to find the desired button. If you cannot avoid touch-activated controls (for example, on a touch screen), you can provide an alternate mode where a confirm button is used to confirm selections (for example, items are read when touched, and activated when the confirm button is pressed). It is also a good idea to make all actions reversible, or require confirmation before executing non-reversible actions.

Controls which require simultaneous activation of two or more buttons should be avoided. Controls which have non-slip surfaces and those that can be operated with the side of the hand, elbow, or pencil can be used to minimize physical activity required. In some cases, rotary controls can be used if they can be operated without grasping and twisting (e.g., a thin pie slice shape control or an edge control). Providing a concave top on buttons makes them easier to use with head sticks, mouse sticks, and artificial or trembling hands.

Strategies for making it easier to insert cards or connectors include providing a bevel around the slot or connector, using cards or connectors that can be inserted in any orientation or which self-center or self-align. Locating the slot or connector on the front and near a ledge or open space that the individual can use to brace their hand or arm can also increase their ability to either rest or steady their arm/hand and facilitate use of the slot or connector. With a scanning technique, the individual items on the screen can be individually highlighted (and optionally announced). When a desired item is reached, the individual can press a switch below the screen to select that item. Although this technique is considerably slower than the other two approaches, it does provide additional access options for individuals with physical disabilities.

Examples of use with restricted reaching or limited strength

Basic strategies involve reducing the force needed to operate controls, latches, etc., as well as avoiding the need for sustained pressure or activity. Other strategies involve providing arm or wrist rests or supports, providing shortcuts to reduce the number of actions needed, or

completely eliminating the need to operate controls wherever possible by having automatic adjustments.

The most straight-forward strategy is to place the controls where they can be easily reached with minimal changes to body position. Many products that have controls located on different parts of the product also allow the functions to be controlled from the keyboard, which is located directly in front of the user. Allowing voice recognition to be used as an option also provides input flexibility, but it should never be the only means for achieving a function. Finally, providing a remote control option for a product not only moves all of the controls for the product together on a unit that can be positioned optimally for the individual, but also allows the individual to operate the device without having to move to it.

To allow individuals who have artificial hands or arms or prosthetic hooks or who use headsticks or mouthsticks to use the screen, it is important that the touchscreen not require that it be touched by a human body. Pressure sensitive, as well as optical technologies can be used.

A problem exists in trying to accommodate both individuals who are very short and individuals who are very tall. Three strategies for addressing this include.

- Screens with adjustable height
- Screens that rotate to present themselves downward or upward
- Dual screen systems

Examples of compatibility with Assistive Devices

The infrared link consists of an industry standard IrDA infrared link coupled to a Universal Disability Infrared Access Protocol. This protocol allows individuals to access and use the workstation/kiosk via the IrDA infrared link. All buttons and actions are controllable via the infrared link. Also, any information presented on the screen can be accessed via the IR link as well.

The infrared link allows individuals to access and use the workstation/kiosk who are unable to reach and touch the standard screen. It also allows individuals who are unable to see the screen or hear any auditory output clearly enough (due to simultaneous visual and hearing difficulties) to access and use it with a separate assistive technology they would bring with them. This technique allows access by individuals with severe physical disabilities, as well as individuals who have simultaneous visual and hearing disabilities or are deaf-blind by allowing them to use personal assistive technologies.

Almost all stationary and portable multimedia computers now include the IrDA link as a standard part of the computer. Support for this link is also built directly into Windows 95.

Examples for use without color perception

Strategies for addressing this guideline basically revolve around eliminating the requirement that a person see color to operate the device. This does not eliminate the use of color in any way as long as the information conveyed by the color is also conveyed in some other fashion. In addition, there are a number of things that can be done to allow even individuals with color anomalies to be able to take advantage of the color-coded information. First, there are a number of common pairs of colors that are indistinguishable by people with color perception anomalies. Avoiding these color pairs avoids or reduces the problems for these individuals. In addition, as long as the colors have different hues and intensity, differently colored objects can be distinguished even on a black and white screen by their different appearance. Depending upon the product, the manufacturer may also be able to allow the user to adjust colors to match their preferences and visual abilities. It is generally a good idea to also avoid colors with a low luminance.

Examples of use without requiring speech

Basically, the way to address this guideline is simply to provide an alternate mechanism for achieving all of the functions that are controlled by speech. If a product includes speech identification or verification, an alternate mechanism for this should be provided as well.

Speech messages can be made accessible if portrayed simultaneously in text form and displayed where easily seen by the user. Such captions should usually be verbatim and displayed long enough to be easily read. If the system provides interactive communication using speech and video, it would be helpful to provide a method for allowing non-speech communication (e.g. text conversation) in parallel with the video.

Examples where use does not trigger motor/sensory seizures

Strategies here will revolve around reducing or eliminating screen flicker or image flashing. In particular, the 10-30 hertz range is the most sensitive frequency range, and should be avoided. The chance of triggering seizures can also be reduced by avoiding very bright flashes which occupy a large part of the visual field (particularly in the center of the visual field) in order to minimize the impact on the visual cortex.

Examples of readability

For persons with limited literacy, 1) use graphics and illustrations to supplement and support textual information, 2) use words that readers can easily understand, i.e., readability formulas that predict the difficulty of the vocabulary used, 3) use sentences that readers can easily process and comprehend, and 4) use generic descriptions, settings, symbols, and background examples that are understandable to most users. Also, it would be helpful to incorporate built-in memory aids, have default settings that anticipate needs, and provide immediate feedback. Creating a personal profile that can be recalled during subsequent use of the workstation would reduce time needed to retrace completed steps. Whenever possible, provide on-site and/or off-site help available when the system is in use, (e.g. an (800) phone line).

Examples of use requiring restricted cognitive/memory abilities

Where a complex series of steps is required, some type of cueing might be provided to help lead the person through the process. It is also helpful to provide an "undo" or back-up function, so that any mistakes can be easily corrected. Where systems are not reversible, some type of confirmation might be requested. On labels and instructions, it is helpful to use short and simple phrases or sentences. Abbreviations should be avoided wherever possible. Eliminating the need to respond within a certain time or to read text within a certain time window is also helpful here.

Also, operation should allow freezing the text. A "Times Square" display which provides a line at a time would be one example. Allowing the user to freeze the text to read it would be another strategy. A third approach might be simply to provide the same information in another type of display that does not move.

These examples and techniques are derived, in part, from the Trace Center, the Congressional Telecommunications Access Advisory Committee, San Diego State University Center for Learning, Instruction, and Performance Technologies, and other sources.

For a listing of all of the published strategies in addressing the performance guidelines, as well as for further information and links to ongoing discussions, see the Access Board's web page at: http://www.access-board.gov and the National Institute on Disability and Rehabilitation Research's Rehabilitation Engineering Center on Access to Telecommunications System's strategies web page at: http://trace.wisc.edu/telecom.

- Additional usability resource materials are listed in Appendix C of this report.
- Usability examples from other states are described in Appendix D of this report.

E. Principles For One-Stop Information and Training (POSIT)

The POSIT team at San Diego State University (SDSU) developed a set of about 100 "practitioner oriented" principles to serve as guidelines for designing, testing, installing, and supporting the electronic One-Stop customer self-help systems. A "Handbook of Usability Principles" is available in printed version as well as in electronic format on the Internet (http://clipt.sdsu.edu).

A summary of the POSIT usability principles was adopted by the One-Stop Task Force on April 22, 1997 to provide a general framework for the "look and feel" of One-Stop EOS systems. The summarized EOS Usability Principles are Appendix A of this report.

V. ELECTRONIC ONE-STOP STEERING COMMITTEE (EOSSC) RECOMMENDATIONS

At the September 4, 1997 meeting of the One-Stop Task Force, the EOSSC presented its recommendations for testing the Technology and Serving Individuals with Special Needs guidelines by conducting a pilot as described in this section.

A. Pilot Approach

Purpose

- To test the feasibility of the Serving Individuals with Special Needs guidelines being able to address a fully accessible workstation using a variety of approaches—hardware, software, or a combination of both hardware and software.

Assumptions

- The pilot will be a public/private partner venture.
- No Solicitation for Proposal will be required

Description

- No more than four pilots at one time will be conducted.
- Pilots will not be greater than six months.
- The vendor community will be approached to determine their interest in participating in a pilot.
- Interested vendors will be asked to complete a proposal. The proposal must include what the vendor will bring to the table and what is expected by the One-Stop partner.

Evaluation

- How many guidelines are met (e.g., hearing, visual, reading level, etc.).
- Usage (who is using the equipment, what features are being used, number of special needs individuals using the equipment).
- Customer satisfaction.

B. Next Steps

The One-Stop Task Force adopted the guidelines and approved the EOSSC's recommendations for piloting the guidelines as follows:

- EOSSC will issue a vendor request to solicit vendor proposals.

- EOSSC will evaluate the vendors' responses, and build pilot selection criteria.

- EOSSC will identify One-Stop partnerships to participate in the pilot.

- EOSSC will bring recommended pilot(s) to the One-Stop Task Force for authorization to proceed. The recommendation will include completed pilot evaluation plans, and a recommendation for statewide implementation.

- Marketing or outreach to the targeted communities will be done.

APPENDIX A

RECOMMENDATIONS TO THE ONE-STOP TASK FORCE ON EOS USABILITY PRINCIPLES

Background

Throughout the One-Stop Career Center System planning process -- in public forums, focus groups and written comments -- issues of customer acceptance, access, and usability of computer-based systems were of paramount concern. To provide a sound research basis and expert guidance to assist in achieving a "customer-friendly" Electronic One-Stop (EOS) environment, Employment Development Department retained the services of Dr. Brock Allen and several associates at San Diego State University (SDSU), to conduct the Principles for One-Stop Information and Training Project (POSIT).

Over the past year, the POSIT team at SDSU identified and developed an initial set of approximately 100 principles which can serve as guidelines for designing, testing, installing, and supporting EOS customer self-help systems. These "practitioner-oriented principles" are available on an Internet database (http://clipt.sdsu.edu) and in a Handbook of Usability Principles for review and use by One-Stop policy makers, planners, product developers, and customer-support staff. The principles are organized in seven sections, each covering a major usability topic (see below).

Recommendation

To summarize the various Usability Principles and to provide a general framework for the "Look & Feel" of One-Stop EOS systems, the Electronic One-Stop Steering Committee recommends the adoption of the following usability principles.

- Universality Access - EOS systems should incorporate technical and physical features that meet the needs of the widest possible range of One-Stop customers.

- Search and Navigation - One-Stop customers should be able to easily search and locate information on EOS Systems.

- Consistency - EOS systems should provide a consistent user interface, which enables the One-Stop customers to concentrate on the information being presented and not on the technology being used.

- <u>Cultural Adaptability</u> - EOS systems should minimize and strive towards the elimination of culturally-biased concepts and terminology.

- <u>Quantitative Data</u> - EOS systems should use the graphical presentation of data and information to enable the One-Stop customer to easily interpret and make inferences from that data.

- <u>Cognitive and Physical Adaptability</u> - EOS systems should be designed to adapt to meet the needs of One-Stop customers with cognitive and physical disabilities.

- <u>Advice and Coaching</u> - One-Stop customers needing assistance to effectively use EOS systems should have access to well-trained, helpful support personnel, either in-person or by telephone.

The recommendations were adopted by the One-Stop Task Force on April 22, 1997 as a "general framework" for usability of Electronic One-Stop Systems.

APPENDIX B

SERVING INDIVIDUALS WITH SPECIAL NEEDS SUBCOMMITTEE CHARTER

Scope

- The subcommittee will investigate and evaluate technology solutions that provide opportunities to serve individuals with special needs, develop guidelines and standards that State and local entities can follow when developing or purchasing technology solutions for serving individuals with special needs.

Objectives

- Provide materials for education on Electronic One-Stop to individuals with special needs
- Publish criteria for locals to use when investing in IT solutions for individuals with special needs
- Encourage the development of public/private partnerships to develop electronic services

Deliverables

- Develop guidelines for input of IT solutions (incorporate as appropriate POSIT Principles)
- Define "special needs" population
- Develop opportunities for piloting of electronic services
- Develop recommendations for piloting
- Provide evaluation criteria for pilot opportunities

APPENDIX C

ELECTRONIC ONE-STOP SYSTEM USABILITY RESOURCE MATERIALS

BOOKS, REPORTS, AND ARTICLES

Allen, Brock, et. al., San Diego State University (SDSU), Center for Learning, Instruction, and Performance Technologies, <u>Handbook of Usability Principles</u>, February 1997.

This is the "hardcopy" version of the POSIT (Principles for One-Stop Information and Training) database which is also available on the WWW as a searchable database with multimedia examples (http://clipt.sdsu.edu). POSIT currently encompasses over 100 research-based "practitioner-oriented principles," on a range of usability topics and issues, arranged by seven major categories including universal access, cognitive and physical adaptability, and advice and coaching on how to use EOS systems.

Allen, Brock, et. al., SDSU, <u>Initial Analysis of Technical Trends and Usability Issues,</u> May 1996.

Reviews contemporary concepts of computer systems' usability and methods for engineering and promoting usability. Raises the issue of usability from the standpoint of capabilities of One-Stop customers, especially their literacy levels and prior experience with computers. Bibliography included.

Gashel, James, National Federation of the Blind (NFB), <u>Creative Approaches to Access For Persons With Disabilities In A One-Stop Center</u>, 1997.

Describes America's Jobline, a job search system accessible by telephone, Jobline was developed by NFB in cooperation with the U.S. Department of Labor and is currently being tested. (Presented at National One-Stop Conference, May 1997).

Kaplan, Deborah, Issue Dynamics, Inc., <u>Universal Design and the Future of the Web</u>, 1997.

Highlights concept of universal design ("a new approach to addressing usability of products and services for persons with disabilities - that goes beyond the disability market"). Identified corporate policies (e.g., Microsoft and Pacific Telesis) for developing accessible information technology. (Presented at California Webmaster's Workshop, January 1997.

Kerka, Sandra, Access to Information: To Have and Have Not, 1995.

> *Notes that access to on-line information is being called, "the civil rights and economic rights issue of the 21st century." States that the concept of literacy in an information-based society must be redefined. Five pages with bibliography.*

Sampson, James P., Jr. et. al., Counseling on the Information Highway: Future Possibilities and Potential Problems, Journal of Counseling and Development, January/February 1997.

> *This article identifies possibilities and problems for delivering career guidance services using the Internet. The need to ensure equality of access, e.g., that "less affluent" clients have some readily accessible "public" location for connecting to the Internet is cited. One suggestion: If client becomes confused about a EOS navigation feature, the system could enable a two-way videoconference with a customer support person.*

RELEVANT INTERNET WEB SITES

Trace Research and Development Center (Wisconsin)
http://trace.wisc.edu
> *Includes guidelines for "designing an accessible world," descriptions of ongoing projects, expert resources, and links to many other sites. Overall, the "Trace" website provides the most comprehensive access to relevant materials*

Center for Accessible Technology
http://www.el.net/CAT
> *A Berkeley-based Center that provides information and guidance on selecting and using computers and adaptive technology.*

Jacob Nielsen Alertbox (Sun Microsystems), Accessible Design for Users With Disabilities, October 1996.
http://www.sun/columns/jacob/
> *Identifies an discusses various design rules which can make the Web more accessible for users with various disabilities.*

Microsoft, Accessibility and Disabilities: Checklist of Accessibility Design Guidelines
http://www.microsoft.com
> *This checklist is a summary of accessibility design guidelines. For details, see The Microsoft Guidelines for Accessible Software Designs.*

Sun Microsystems, Enabling Technology
http://www.sun.coom/tech/access/updt.HCI.advance.html
>*Includes Towards Accessible Human-Computer Interaction (with many references) by Eric Bergman of SunSoft.*

The Tomas Rivera Policy Institute (Clarement, California)
http://www.cgs.edu/inst/trc.html
>*Includes policy brief, Latinos and the Information Superhighway, which identifies issues related to computer affordability, "know-how" to use information tools, and access to information systems by persons with limited English proficiency.*

WebABLE
http://www.webable.com/
>*A WWW site which bills itself as the "Webs First-Stop Shop for People With Disabilities."*

OTHER RELEVANT ACTIVITIES AND SERVICES

AT&T Language Line Access - Missouri
//riker.ps.mpssouri.edu/DeptPubs/Mizzou_Telecom/Connections/JUN93/conn5/5/97sl
>*Language Line is a service that allows callers to request an interpreter to assist in communicating with another caller or visitor who does not speak English. There is a subscription cost. MCI offers a Language Interpretation service with 24 hour advance notice for a fee.*

AT&T Language Line Services
http://www.att.com/languageline/index.cgi
>*The AT&T Language Line offers 140 languages through a virtual interpreter system. It requires that the individual making the request speak English, however.*

Globalink Translation Products
http://www.att.com/press
>*Released June 13, 1996, Flobalink, inc., the world's "leading provider of language services" will distribute AT&T web translation services for English, Spanish, French or German. Includes telephone numbers for contact persons.*

APPENDIX D

ELECTRONIC ONE-STOP SYSTEMS USABILITY EXAMPLES FROM OTHER STATES

Connecticut

Connecticut Works Library Project
Contact: Deborah Nanfito - Connecticut DOL- (860) 566-2533
              Sharon Brettschneider - Connecticut State Library - (860) 566-4301

This effort is a partnership between the Connecticut State Library, local public libraries and the Connecticut Department of Labor (CDOL). The State-local library system and the CDOL are working together to improve access to workforce development information for individuals and businesses through the establishment of a network of Electronic Workforce Development Resource Centers (WDRC). Two prototype projects were conducted.

The CDOL is granting funds to each designated library to purchase equipment which enables public access to the CDOL web site and related web sites which provide job, career and labor market information. Participating libraries will be responsible for the installation, maintenance and Internet service costs for the Connecticut Works WDRC. Other resource materials will be purchased, maintained, and circulated. Orientation sessions are being conducted for librarians on the use of the on-line EOS and other resource materials so that they can provide assistance, especially for users with special needs.

Resource material: MOU between CDOL and State Library.

Texas

Texas Workforce Commission (TWC)
Contact: Peggy Leonard (512) 463-7730

The Texas committee on "Serving Persons With Disabilities" has three major objectives:

- To ensure effective linkages at the local level between One-Stop Centers and three State commissions for: Rehabilitation; the Blind, and the Deaf and Hard of Hearing. In many centers staff from the Rehabilitation Commission provide services on-sit on an itinerant basis.

- To provide information on technology available to make services more accessible to a universal population.

- To provide a self-assessment guide for each center that allows them to measure their current status in relation to ADA requirements.

For customers uncomfortable with and/or having limited exposure with technology, their current approach is to have touch screen Kiosks in public areas. For persons whose primary language is not English, interpreters are available in centers. The Kiosks provide audio "how to use" instructions in Spanish but content (e.g., job bank listings) is currently in English only.

Vermont

Department of Employment & Training (DET)
One-Stop Career Resource Centers
Contact: Bernie Juskiewicz (802) 888-2540

Each of the Vermont One-Stops have resource areas with personal computers and other technology available for customer self-access and equipped with the following assistive technology to ensure equal access: FM Loop for hearing impaired individuals, TTY telephone unit, closed circuit monitor for visually impaired individuals, ZOOM text on personal computers, and adjustable computer tables for individuals with mobility impairments. In addition, representatives from collaborating agencies including a Vocational Rehabilitation Specialist and staff from VT Associates (older worker), and a farmworker program are co-located on site to assist customers as needed to use the EOS systems.

Resource material: Fact sheet on Vermont's Resource Centers.

Washington

Seattle-Kings County PIC
Learning Disabilities Project
Contact person: Dan Fey (206) 448-0474

The U.S. Department of Labor (DOL) has provided a One-Stop Systems Building Grant to the Seattle-Kings County PIC to design an Electronic One-Stop (EOS) system for persons with special learning needs & related disabilities. "Sample accommodations" to be included are:

- Space which is distraction free from visual and/or auditory stimuli.
- Allow customers more time.
- Allow customers to dictate responses into a tape recorder or use a scribe
- Verbally present information while the customer follows along on a printed version.

Resource material: Presentation outline from National One-Stop Conference

Wisconsin

JobNet - Department of Workforce Development (DWD)
Improving Access to JobNet
Contact person: Joe Kuschel (608) 267-7271

The Wisconsin DWD, working with the Department of Vocational Rehabilitation (DVR), has installed two JobNet (in-line access to job openings) workstations in a DVR office to research methods to make JobNet more accessible by persons with disabilities on a self-service basis. Two different types of Job Net workstations are being used: (1) a touchscreen version, and (2) one that is accessible through the WWW via Internet. Feedback will be obtained from DVR's customers on their satisfaction with the various approaches, and applied at other DWD areas to improve access and customer service.
Resource material: Summary description of features.